

UNITED STATES DEPARTMENT OF THE INTERIOR
OFFICE OF AIRCRAFT SERVICES

SAFETY ALERT

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Subject:

Dehydration

Distribution:

All DOI Aviation Activities (Coordinated with Forest Service Aviation Safety)

Discussion: This office has recently received several reports of pilots and crewmembers experiencing dehydration and other heat related illnesses during fire related activities. The attached article *Dehydration and the Pilot*, published in the July/August issue of *FAA Aviation News*, discusses symptoms and preventative measures for common heat-related illnesses.

Recommendations:

1. Please reproduce and distribute this information as necessary to provide the widest possible distribution to fire and aviation personnel in the field.
2. Closely monitor personnel in the field for the symptoms of dehydration and heat related illness and take the appropriate preventative measures.

If you have any questions regarding this subject please contact your OAS Area/Regional office:

| | |
|------------------------------------|--------------|
| Alaska Regional Office (Anchorage) | 907-271-3700 |
| East Area Office (Atlanta) | 770-458-7474 |
| West Area Office (Boise) | 208-334-9310 |
| West Area Office (Phoenix) | 602-640-2633 |



Robert Galloway
Aviation Safety Manager

Dehydration and the Pilot

By Rogers V. Shaw, II

With the return of spring and its warming temperatures and better flying weather, it's time to educate general aviation pilots about proper fluid intake for body hydration. The educational process should start now, before the heat of summer causes pilots to become dehydrated and at increased risk for incidents and accidents.



Flight safety preparation includes noise-reduction headset, current navigational charts—and plenty of cold drinking water for proper hydration.

We live in different climatic regions and are all physiologically different, so all we can do is describe the standards for average conditions. Adjustments must be made depending on the circumstances.

A few hot weather causes of dehydration are hot cockpits and flight lines, wind, humidity, and diuretic drinks - coffee, tea, alcohol, and soft drinks—changes in climatic conditions, sunburns, and improper attire for conditions.

Some common signs of dehydration are headache, fatigue, cramps, sleepiness, and dizziness.

Here, in checklist form, are the three stages of heat exhaustion. Transition from the one to the other can be very evident, hardly noticeable, or not evident at all.

1. Heat stress (body temperature, 99.5-100° F) reduces
 - Performance, dexterity, and coordination
 - Ability to make quick decisions
 - Alertness
 - Visual capabilities
 - Caution and caring
2. Heat exhaustion (101-5° F) symptoms:
 - Fatigue
 - Nausea/vomiting
 - Giddiness
 - Cramps
 - Rapid breathing
 - Fainting
3. Heat stroke (>105° F) symptoms
 - Body's heat control mechanism stops working

- Mental confusion
- Disorientation
- Bizarre behavior
- Coma

Preventing dehydration

To help prevent dehydration, you should drink two to four quarts of water every 24 hours. Since each person is physiologically different, this is only a guide. Most people are aware of the eight-glasses-a-day guide: If each glass of water is eight ounces, then you end up with 64 ounces, which is two quarts.

The key is that you should be continually aware of your condition. Most folks will become thirsty with a 1.5-quart deficit, or a loss of 2% of total body weight. This level of dehydration triggers the "thirst mechanism." The problem, though, is that the thirst mechanism arrives too late and is turned off too easily. A small amount of fluid in the mouth will turn this mechanism off- and the replacement of needed body fluid is delayed. Remember, the amount of water you drink will depend on work level, temperature, humidity, personal lifestyle, and individual physiology.

If you do not stay aware of the environmental conditions and your personal physiological status, you can progress to heat exhaustion, even if you are maintaining the above re-hydration water intake. This is because under certain conditions external fluid intake cannot keep up with the loss of fluid by the body.

Here are some suggestions on how to be aware of and prevent heat exhaustion.

1. Drink cool (40° F) water (forget the old "sports day" theory that lukewarm water is absorbed faster into the system).
2. Carry a container so you can measure daily water intake.
3. Don't rely on the thirst sensation as an alarm...stay ahead. If plain water is offensive, add some sport drink flavoring to make it more acceptable.
4. Limit your daily intake of caffeine and alcohol (both are diuretics and stimulate increased production of urine)
5. Exercise can cause a large amount of body fluid loss that is difficult to replace quickly.
6. Acclimation to a major change in weather takes one to two weeks.
7. Monitor personal effects of aging, recent illness, fever, diarrhea, or vomiting.
8. Monitor your work and recreational activity; if you feel light-headed or dizzy, call it a day.
9. In extreme heat and exercise conditions, salt and electrolyte loss is a factor but not for the average person with a moderate exercise program. The American diet takes care of the loss.

Fly safe and never pass up an opportunity to have a fresh glass of water.

Rogers Shaw is the team coordinator of the CAMI Aeromedical Education Division's Airman Education Program.